

Triton Analytics Corp.
 16840 Barker Springs, #302
 Houston, TX 77084
 (281) 578-2289

Certificate of Analysis

Equilibrium Flash Vaporizer Results																	
Feed ID: Crude Oil		Feed API: 33.6					Feed SG: 0.8570										
EFV Run #	Feed	TBP	1	2	3	4	5	6	7	8	9	10	11	12	13		
EFV Cut Point, deg F (AET)		650	850	875	900	925	950	975	1000	1025	1050	1075	1100	1125	1150	1150+	
Flash Zone Conditions																	
Temperature, deg F		384	525	548	570	590	614	635	658	680	703	720	746	767	789		
Vacuum, mmHg(abs)		10.0	5.1	5.2	5.3	5.1	5.3	5.2	5.2	5.2	5.3	4.7	5.0	4.8	4.7		
EFV Overhead Product																	
Run Yield, wt%		51.3	31.4	5.3	5.1	5.6	6.1	7.3	7.0	7.5	7.2	8.1	8.9	10.8	12.6		
Cut Yield (on feed), wt%		51.3	15.3	1.8	1.6	1.7	1.7	1.9	1.7	1.7	1.5	1.6	1.6	1.8	1.9	12.9	
Cut Yield (on feed), lv%		56.5	14.5	1.6	1.5	1.6	1.6	1.8	1.6	1.6	1.4	1.4	1.4	1.6	1.6	10.4	
Cum Yield (on feed), wt%		51.3	66.6	68.3	70.0	71.6	73.4	75.3	77.0	78.8	80.3	81.9	83.5	85.3	87.1	100.0	
Cum Yield (on feed), lv%		56.5	71.0	72.6	74.1	75.7	77.2	79.0	80.6	82.1	83.5	84.9	86.3	87.9	89.6	100.0	
Microcarbon, wt%		4.00	0.00	0.04	0.09	0.18	0.35	0.60	0.99	1.58	2.30	3.23	4.32	5.92	7.70	29.5	
C5 Asphaltenes (IP-143), wt %														<0.1	0.1	22.5	
C7 Asphaltenes (IP-143), wt%														<0.1	0.1	16.9	
High Precision Hydrogen, wt %		12.72	14.09	12.34	12.11	11.92	12.01	11.86	11.77	11.70	11.61	11.54	11.40	11.33	11.23	11.12	9.75
Total Sulfur, wt%		1.913	0.558	2.370	2.509	2.579	2.655	2.687	2.840	3.004	3.093	3.078	3.283	3.258	3.451	3.574	4.640
Total Nitrogen, wt%		868 ppm	12 ppm	485 ppm	602 ppm	694 ppm	773 ppm	851 ppm	940 ppm	0.104	0.113	0.123	0.134	0.144	0.157	0.172	0.372
Nickel, ppm wt		3.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4	0.4	0.8	27
Vanadium, ppm wt		13.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	0.5	0.7	1.2	2.0	3.1	5.0	99
Density @60F		0.8561	0.7752	0.9023	0.9103	0.9181	0.9250	0.9315	0.9376	0.9430	0.9482	0.9525	0.9578	0.9622	0.9670	0.9718	1.0539
API Gravity @60F		33.6	50.8	25.2	23.8	22.5	21.3	20.3	19.3	18.4	17.6	16.9	16.1	15.4	14.7	14.0	2.6
Specific Gravity @60F		0.8570	0.7760	0.9032	0.9112	0.9190	0.9259	0.9324	0.9386	0.9439	0.9491	0.9534	0.9588	0.9631	0.9680	0.9728	1.0549